RD-26,440-3 is a
Division of RD-26,440-5

WHAT IS CLAIMED IS:

1. A method for preparing a copolymer of a first polymer which is a polyethersulfone, polyetherketone, or polyetherimide and a second condensation polymer characterized by structural units containing an oxycarbonyl group, which comprises contacting, under reactive conditions, at least one salt of a dihydroxyaromatic compound with at least one substituted aromatic compound of the formula

(I) $Z(A^1\text{-}X^1)_2$,

wherein Z is an activating radical, A^1 is an aromatic radical and X^1 is fluoro, chloro, bromo or nitro, in the presence of said second polymer.

2. The method according to claim 1 wherein the second polymer is present in the amount of about 2-50 mole percent of structural units therein based on substituted aromatic compound.

3. The method according to claim 2 wherein the molar ratio of said salt to said substituted aromatic compound is 0.98-1.02:1.

4. The method according to claim 3 wherein the molar ratio of said salt to said substituted aromatic compound is 1:1.

5. The method according to claim 2 wherein the contact temperature is in the range of about 125-300°C.

6. The method according to claim 1 wherein the second polymer is a polyarylate.

7. The method according to claim 6 wherein the polyarylate is a bisphenol A, resorcinol or hydroquinone iso/terephthalate.

8. The method according to claim 2 wherein the dihydroxyaromatic compound salt is a sodium or potassium salt.

9. The method according to claim 2 wherein the second polymer is a polycarbonate.

10. The method according to claim 9 wherein the dihydroxyaromatic compound has the formula

(II) $HO\text{-}A^2\text{-}OH$,

wherein A^2 is a divalent aromatic hydrocarbon radical.

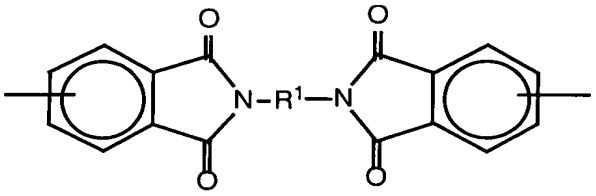
11. The method according to claim 10 wherein A^2 has the formula

(III) $-A^3\text{-}Y\text{-}A^4-$,

wherein each of A^3 and A^4 is a monocyclic divalent aromatic hydrocarbon radical and Y is a single bond or a bridging radical in which one or two atoms separate A^3 from A^4.

12. The method according to claim 11 wherein Y is isopropylidene and A^3 and A^4 are each p-phenylene.

13. The method according to claim 9 wherein $-A^1\text{-}Z\text{-}A^1-$ is a bisimide radical of the formula

(IV) 

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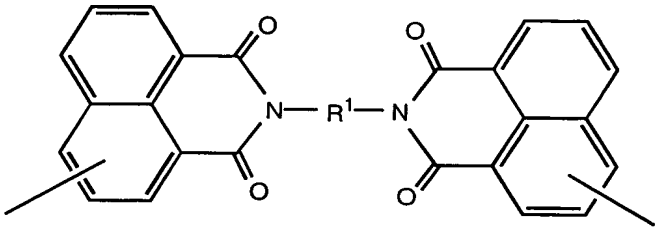
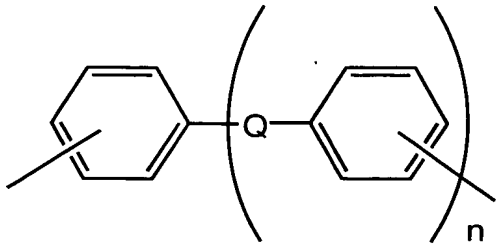
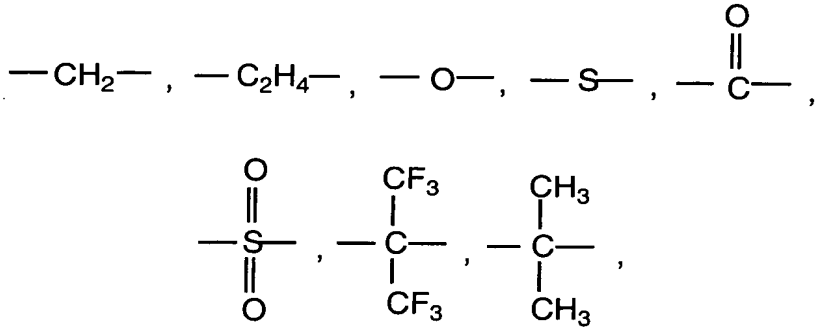
or

(V) 

wherein R^1 is a C_{6-30} divalent aromatic hydrocarbon or halogenated hydrocarbon radical, a C_{2-20} alkylene or cycloalkylene radical, a C_{2-8} bis(alkylene-terminated) polydiorganosiloxane radical or a divalent radical of the formula

(VI) 

in which n is an interger from 1 to 3 inclusive and Q is



or a covalent bond.

14. The method according to claim 2 wherein the substituted aromatic compound is a bis(haloaryl) ketone.

15. The method according to claim 2 wherein the substituted aromatic compound is a bis(haloaryl) sulfone.

16. The method according to claim 15 wherein the bis(haloaryl) sulfone is bis(4-chlorophenyl) sulfone.

17. The method according to claim 2 wherein a solvent is present.

18. The method according to claim 17 wherein the solvent is a dipolar aprotic solvent.

19. The method according to claim 17 wherein the solvent is a water-immiscible aromatic compound.

20. The method according to claim 19 wherein the solvent is o-dichlorobenzene or anisole or a mixture thereof.

21. The method according to claim 19 wherein a phase transfer catalyst is also present.

22. The method according to claim 21 wherein the phase transfer catalyst is a hexaalkylguanidinium halide.

23. The method according to claim 21 wherein the contact temperature is in the range of about 125-250°C.

24. A method for preparing a copolyethersulfonecarbonate which comprises contacting, under reactive conditions, at least one alkali metal salt of bisphenol A with bis(4-chlorophenyl) sulfone in solution in o-dichlorobenzene or anisole, in the presence of a polycarbonate and about 1-10 mole percent, based on said bis(4-chlorophenyl) sulfone, of a hexaalkylguanidinium halide as phase transfer catalyst and at a temperature in the range of about 125-250°C.

25. A method for preparing at least one hydroxy-terminated oligomer of a polyether polymer which comprises:

preparing a copolymer of a first polymer which is a polyethersulfone, polyetherketone, or polyetherimide and a second condensation polymer characterized by structural units containing an oxycarbonyl group, by contacting, under reactive conditions, at least one salt of a dihydroxyaromatic compound with at least one substituted aromatic compound of the formula

$$(I)\quad Z(A^1\text{-}X^1)_2\ ,$$

wherein Z is an activating radical, A^1 is an aromatic radical and X^1 is fluoro, chloro, bromo or nitro, in the presence of said second polymer; and

contacting said copolymer with aqueous alkali under reactive conditions, thus hydrolyzing carbonate and ester units.

26. The method according to claim 25 wherein the dihydroxyaromatic compound salt is a sodium or potassium salt.

27. The method according to claim 25 wherein the second polymer is a polyester.

28. The method according to claim 25 wherein the second polymer is a polycarbonate.

29. The method according to claim 28 wherein the polycarbonate is a bisphenol A polycarbonate.

30. The method according to claim 29 wherein the substituted aromatic compound is a bis(haloaryl) sulfone.

31. The method according to claim 25 wherein a water-immiscible aromatic compound is present as solvent.

32. The method according to claim 31 wherein the solvent is o-dichlorobenzene or anisole or a mixture thereof.

33. The method according to claim 31 wherein a phase transfer catalyst is also present.

34. The method according to claim 33 wherein the phase transfer catalyst is a hexaalkylguanidinium halide.

35. The method according to claim 33 wherein the contact temperature in the copolymer preparation step is in the range of about 125-250°C.

36. A method for preparing at least one hydroxy-terminated oligomer of a polyethersulfone which comprises:

preparing a copolymer of a polyethersulfone and a polycarbonate by contacting, under reactive conditions, at least one alkali metal salt of bisphenol A with bis(4-chlorophenyl) sulfone in the presence of said polycarbonate in solution in o-dichlorobenzene or anisole, further in the presence of about 1-10 mole percent, based on said bis(4-chlorophenyl) sulfone, of a hexaalkylguanidinium halide as phase transfer catalyst and at a temperature in the range of about 125-250°C; and

contacting said copolymer with aqueous sodium hydroxide or potassium hydroxide under reactive conditions, thus hydrolyzing carbonate units.